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Xylaria hongkongensis sp. nov. from an urban tree

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Abstract — A new species of *Xylaria* from Hong Kong, China, is described based on its teleomorphic characters and is distinguished by its conical stromata and small spores. The fungus was found on the trunk of a living *Bauhinia variegata* in an urban park, and the infected tree exhibited overall declining symptoms including branch dieback and leaf discoloration.

Key words — taxonomy, wood decay fungi, *Xylariales*

Introduction

Trees in cities constitute the most prominent elements of urban nature due to their seasonal changes, size, shape, and color (Tyrväinen et al. 2005). However, they are beset by many aerial and subterranean stresses, making them susceptible to fungi (Bradshaw et al. 1995, Luley 2005, Sinclair & Lyon 2005). Loss of mechanical strength caused by fungal damage in urban areas can be linked to hazardous situations such as tree wind throws or limb failures, resulting in significant property damage and injuries. Therefore, timely assessment and accurate identification of wood decay fungi are important for assessing structural stability and predicting the probability of tree failure or decline.

During an assessment of trees on an urban slope, a species of *Xylaria* was found on a declining *Bauhinia variegata*. The tree exhibited dieback symptoms with leaf discoloration and browning. Numerous stromata emerged on one dead trunk and along bark cracks of the declining trunk. Morphological features showed that this fungus represents an undescribed species of *Xylaria*, which is described and illustrated here.

Materials & methods

Fungal samples were collected on a slope of Waterfall Bay Park, Waterfall Bay Road, Wah Fu, Southern District, Hong Kong, China. Microscopic observations were made in water, and Melzer's reagent was used to test the amyloidity of apical ring. Measurements were taken at ×400 magnification on samples of 30 ascospore, 20 asci, and 10 perithecia. A herbarium specimen was deposited in the Institute of Microbiology, Chinese Academy of Science, Guangzhou, China (GDGM), and a living culture placed in Centraalbureau voor Schimmelcultures, The Netherlands (CBS).

Taxonomy

Xylaria hongkongensis A.M.C. Tang, R.Y.C. Lam & M.W.K. Leung, **sp. nov.** Fig. 1

MycoBank MB 807096

Differs from *Xylaria pallide-ostiolata* by its cylindric-clavate stromata with conical apices and shorter and lighter-colored ascospores.

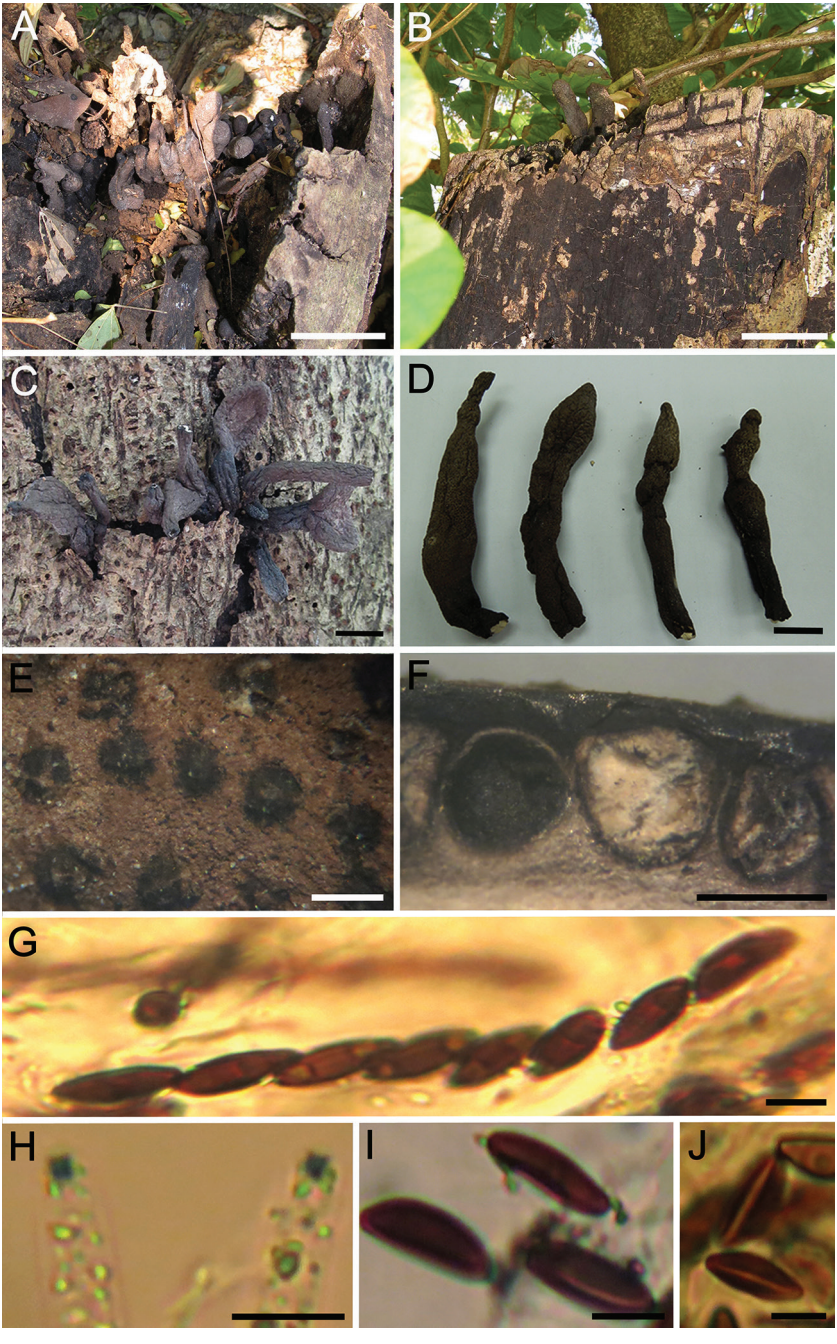
Type: China, Guangdong Province, Hong Kong, Southern District, Wah Fu, Waterfall Bay Road, Waterfall Bay Park, on trunk of *Bauhinia variegata* L. *(Caesalpiniaceae*), 14.I.2011, A.M.C. Tang (**Holotype**, GDGM40058; ex-type culture, CBS 136698; GenBank KF926669).

Etymology — Referring to the type locality region.

Stromata upright, solitary or caespitose, unbranched, nearly sessile to slightly stipitate, cylindric-clavate, sterile apices conical to subglobose, 38–67 mm total length, 8–12 mm diameter; surface dark brown, roughened with wrinkles. Perithecia with slightly exposed outlines, subglobose, 410–840 µm high, 410–690 µm diam. Ostioles slightly papillate or inconspicuous. Asci 8-spored, cylindrical, long-stipitate, 120–147.5 µm total length, 3.75–7.5 µm width, the spore-bearing part 67.5–95 µm long, with apical apparatus bluing in Melzer's reagent, tubular-shaped, 3–4.5 µm high × 2–3 µm broad. Ascospores brown to dark brown, unicellular, ellipsoid-inequilateral, 12.5–15 × 5–7.5 µm, smooth, usually with a straight germ-slit nearly spore length on the concave side.

Comments — This new *Xylaria* possesses a combination of morphological characters that do not match any previously described species. Based on its stromatal appearance, *X. hongkongensis* should be categorized in the *X. polymorpha* complex. Its ascospores resemble those of *X. pallide-ostiolata* Henn. (12–18 × 6–7 µm; San Martín & Rogers 1989: 356) and *Xylaria* sp. SM303 (12.5–14.5 × 5–5.5 µm; San Martín & Rogers 1989: 364–365), but *X. pallide-ostiolata* differs by its broadly clavate stromata with rounded apices

Fig. 1. *Xylaria hongkongensis* (holotype, GDGM40058). a–b: Stromata on dead trunk. c: Stromata emerged on cracks of trunk. d: Herbarium specimen GDGM40058. e: Stromatal surface with ostioles. f: Section through stroma, showing perithecial layer. g: Ascus in water. h: Apical apparatus of immature asci stained in Melzer's reagent. i: Ascospores observed in water. j: Ascospores observed in water showing germ slit morphology. Scale bars: a–b = 5 cm; c–d = 1 cm; e–f = 500 µm; g–j = 10 µm.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and its longer black spores, while *Xylaria* sp. SM303 differs by a germ-slit that is much less than spore length and its longer asci (148–166 µm). *Xylaria scruposa* (Fr.) Fr., which has similarly sized stromata (15–60 × 2–6 mm), differs by its narrow stroma with a highly roughened surface and longer ascospores (18–22 × 6–7 µm; San Martín & Rogers 1989: 363).

It is noteworthy that *X. hongkongensis* was found in association with trunk and basal rot in a common urban tree during our tree risk assessment. This association reminds us that some *Xylaria* species could manifest themselves as pathogens on weak hosts, especially in susceptible urban plantations. Since *Xylaria* species are ubiquitous endophytes of most vascular plants (Petrini et al. 1995), under favourable conditions *Xylaria* species might change their passive ecological strategy into an active mode (Promputtha et al. 2007). *Xylaria* species have long been recognized as causing root rot on alfalfa, apple, crabapple, eastern redbud (*Cercis canadensis*), hedge maple (*Acer campestre*), pear, and thornless honeylocust (*Gleditsia triacanthos* var. *inermis*) (Rogers 1984, Proffer 1998). Thus, it is important to stay vigilant on trees showing signs of stress.

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